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# The Classical Weekly

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## IRRIGATION AMONG THE GREEKS AND THE ROMANS

(Concluded from page 74)

Turning now to Latin authors we note first Cato, *De Agri Cultura* 151. Writing there of the cultivation of *cupressi*, *cupresseta*, after Manius Percennius Nolanus, Cato says, inter alia, in paragraphs 3-4:

areas facito pedes latas quaternos: subcavas facito, uti aquam continere possint. . . . siquando non pluet, uti terra sitiât, aquam inrigato leniter in areas <in paragraph 2 he had recommended planting *ubi aqua propter siet*>. Si non habebis unde inriges, gerito inditoque leniter <aquam>. Quotienscumque opus erit, facito uti aquam addas<sup>1</sup>.

Varro, *De Re Rustica* 1.35.1, says:

Violaria in fundo facere non est utile, ideo quod necesse est terra adruenda pulvinos fieri, quos irrigationes et pluviae tempestates abluunt et agrum faciunt macriorem.

Mr. Lloyd Storr-Best (Varro on Farming, London, G. Bell and Sons, 1912) translates this as follows:

It is not good to make violet beds on a farm, because the earth must be raised for them, and small mounds are thus necessarily produced, which are washed away by artificial watering and by rain storms, and so impoverish the soil.

In *De Officiis* 2.12 ff. Cicero is arguing that mutual helpfulness is the key to civilization. To such mutual helpfulness man owes houses, which keep out the rigors of the cold and alleviate the discomforts of the heat; through such mutual helpfulness men repair the ravages of tempest, earthquake, time. In §14 he says:

Adde ductus aquarum, derivationes fluminum <'canals'>, *agrorum irrigationes*, moles oppositas fluminibus, portus manu factos, quae unde sine hominum opere habere possemus?

In the *Cato Maior* 53, towards the end, Cicero makes Cato Censor, the author of the *De Agri Cultura*, speak as follows:

Quid ego irrigationes, quid fossiones agri repastionesque proferam, quibus fit multo terra fecundior?

In *De Natura Deorum* 2.152 Cicero writes thus:

Terrenorum item commodorum omnis est in homine dominatus. Nos campis, nos montibus fruimur, nostri sunt amnes, nostri lacus, nos fruges serimus, nos arbores, nos aquarum inductionibus terris fecunditatem damus, nos flumina arcemus, derigimus, avertimus,

<sup>1</sup>Cato, *De Agricultura* 155, cited in Pauly-Wissowa's as dealing with irrigation, deals rather with drainage.

nostris denique manibus in rerum natura quasi alteram naturam efficere conamur.

On this Professor J. B. Mayor, in his elaborate edition, cited only *De Officiis* 2.14, and *Georgics* 1.106.

In *Eclogue* 3, Vergil describes a contest of song between two shepherds. In the concluding verses (108-111) the referee Palaemon is made to say:

non nostrum inter vos tantas componere lites:  
et vitula tu dignus et hic—et quisquis amores  
aut metuet dulcis aut experietur amores.  
Claudite iam rivos, pueri: sat prata biberunt.

Vergil, *Georgics* 1.100, bids the farmers pray for moist summers and sunny winters, because best for the crops is the sequence of wet summers and dry winters. Vergil speaks then of the scattering of the seed and inquires about the man who

deinde satis fluvium inducit rivosque sequentis  
et, cum exustus ager morientibus aestuat herbis,  
ecce supercilio clivosi tramitis undam  
elicit? illa cadens raucum per levia murmur  
saxa ciet scatebrisque arentia temperat arvis.

We may translate this as follows (disregarding the question):

'<he> brings upon his crops a water course, guiding its streamlets as he will, and, when the scorched land swelters, and the green blades would feign die, lo, from the brow of the hillside channel he decoys the water. The water, as it falls, wakes murmurs amid the smooth stones, and with its gushing stream gives the thirsty fields just the draughts they need'.

In his valuable book, *Remains of Ancient Rome*, 2.119, Professor J. H. Middleton says that Frontinus, who was for years *Curator Aquarum* and whose book on the Roman aqueducts is still extant, gives, in a list of penalties for various offenses, one, "for irrigating land with water from a public aqueduct. . .". He does not, however, tell us where Frontinus says this.

In Columella, according to Pauly-Wissowa 1.1.278, there are references to irrigation—of millet, 2.9.17 (cf. Palladius 4.3); of hemp, 2.10.21 (cf. Pall. 3.5); of clover ("Lucerne"), 2.10.26 (cf. Pliny, N. H. 18.145; Pall. 3.6); of sesame, 2.10.18; of turnips ("Rüben"), 2.10.23.

When I began this paper, I was under the impression, gained no doubt from such familiar passages as Xenophon, *Anabasis* 2.4.13, Euripides, *Medea* 824-842, Cicero, *Cato Maior* 53, *De Natura Deorum* 2.152, *De Officiis* 2.14, that irrigation was very commonly practiced by the Greeks and the Romans. I have, however, already quoted (page 73) the statement of

Pauly-Wissowa that on the whole the practise of irrigation was not very common in ancient Greece, at least in small farming. In Pauly-Wissowa 1.1.278 we read (though the inadequacy of treatment here, and the jumbling together of references to drainage and irrigation should give us pause), ". . . so ist die *irrigatio agrorum* (Cic. Off. 14<sup>2</sup>) doch wohl seltener, vielleicht mit Ausnahme der Poebene, bei eigentlichem Ackerlande gekommen". Here follow certain references, especially those to Columella employed above. Then comes, without a single supporting reference, this assertion: "Häufiger wurde sie bei Wiesen, Gärten, mitunter auch Wein- und Oelpflanzungen angewandt".

It may be that in the word *rivalis* (or, perhaps we should say, in one of the words *rivalis*<sup>3</sup>) we are to see evidence concerning irrigation. In Aulus Gellius 14.1 Favorinus, the philosopher, is assailing the Chaldaeans qui ex coetu motibusque siderum et stellarum fata hominum dicturos pollicentur. Gellius reports Favorinus's remarks in oratio obliqua. In §4 the record runs thus:

Esse autem nimis quam ineptum absurdumque, ut, quoniam aestus oceani cum lunae curriculo congruit, negotium quoque alicuius, quod ei forte de aquae ductu cum rivalibus aut de communi pariete cum vicino apud iudicem est, ut existimemus id negotium quasi habena quadam de caelo vinctum gubernari.

In Digest 43.20.1 §26 we find this: si inter rivalet, id est qui per eundem rivum aquam ducunt, sit contentio de aquae usu. . . .

In Ulpian, Digest 8.3.1, among the *servitutes rusticorum praediorum* is mentioned *aquaeductus*; this is defined soon as *ius aquam ducendi per fundum alienum*. This may involve the use of water for irrigation purposes. Still, immediately after the words just quoted this sentence appears: In rusticis computanda sunt aquaehaustus, pecoris ad aquam adpulsus. . . .

In Classical Philology 12.237-243 (July, 1917) Professor W. L. Westermann had an interesting paper entitled Aelius Gallus and the Reorganization of the Irrigation System of Egypt under Augustus. On page 239 he cites Suetonius, Augustus 18.2:

Aegyptum in provinciae formam redactam ut feraciorem habilioremque annonae urbanae redderet, fossas omnis in quas Nilus exaestuat, oblimatas longa vetustate, militari opere deterisit.

Says Professor Westermann (239):

The use of the soldiery on this fatigue duty is sufficient proof of the large and organized scale upon which the work was conducted. The necessity of this large enterprise presupposes gross neglect of the irrigation system under the lax administration of the later Ptolemies.

The date of Augustus's measures, their importance to the steadying of the grain supply for Rome, and their success are discussed in detail by Professor Westermann (239-243).

Here we must leave the subject for the present. I have been able only to examine the more obvious sources of information. A more thorough and detailed study might show that there is a theme here for a doctoral dissertation.

C. K.

## HOW MAY THE TEACHER OF CLASSICS TAKE ADVANTAGE OF THE PRESENT OPPORTUNITY?<sup>1</sup>

This paper consists mostly of quotations. A subtitle might be A Plea to the Classicist to join the Ranks of the Modernists.

Without further preamble I plunge into my first quotation, taken from an article by Mr. Roy C. Hack in The Atlantic Monthly of last February:

We have now examined the two principal classes of educational experts, and we have found that they are engaged in a stupid and distracting quarrel. Each of them is vaguely aware that our system of education is imperfect; but what remedy has either one of them to propose? The Humanist advises us to let things alone, and in so doing he forgets that neither humanism nor common sense has anything to say in praise of men who let things alone. It would be difficult to imagine a remedy more frivolous, if it were not for the Moderns, who have surmounted the difficulty, and advise us to sever our bonds with the past and to worship science and industry.

Certainly the quarrel has been distracting. We have suffered keenly (though we hate to acknowledge it)

<sup>2</sup>Correct to 2.14.

<sup>3</sup>The word *rivalis*, 'rival in love', which appears as early as Plautus, Stichus 434, 729 (Lindsay), both Lewis and Short and Georges (Lateinisches-Deutsches Handwörterbuch<sup>3</sup>) had regarded as the word *rivalis* discussed above, used in a transferred sense. But Walde, Lateinisches-Etymologisches Wörterbuch<sup>2</sup> (1910), following other scholars, rejects this view and thinks of two different words from different roots.

<sup>1</sup>This paper was read at the Twelfth Annual Meeting of The Classical Association of the Atlantic States, held at the Drexel Institute, Philadelphia, May 11, 1918.

under the attacks of Dr. Flexner. We are even more deeply humiliated because ex-President Eliot, whom we should gladly claim as friend, has set us off in the far Elysium Fields where we may dispense our gifts only to the happy few. But such men as these are the men who are directing educational affairs. If we are to prove the stupidity of the quarrel and have a part in shaping our educational policies, a knowledge of the writings of prominent educators is essential.

Needless to say, these men present a new aim in education. Our ancient claim that Latin was useful for mental discipline has, they assert, long ago been exploded, for modern psychologists have proved, what we have always suspected, that we have no minds. Our aim must be different, if we wish to be modern. A few random quotations will serve to illustrate the modern aim of education.

Mr. Ellwood P. Chubberty, Professor of Education at Leland Stanford University, says:

Reading, writing. . . , the elements of education, . . . are really of little value except as they are closely related with the needs of our social, civic and industrial life.

Another quotation is from School and Society:

The aim of education is efficiency, vital efficiency, vocational efficiency, avocational efficiency, civic, moral. . . efficiency. Only those studies should